# CLAIMS

What is claimed is:

1. An intervertebral fusion device, comprising:

(a) a body having a proximal portion along a major axis of the body and a distal portion along the major axis and wherein the body defines a conduit substantially parallel to the major axis; and

(b) supporting means at the distal portion that support vertebrae in a distracted position while the vertebrae fuse and wherein the supporting means define a conduit in fluid communication with the conduit defined by the body,

wherein at least a portion of the body or the supporting means has a height distinct from a width taken along a cross-section of the portion of the body or supporting means perpendicular to the major axis, whereby the portion of the body or supporting means can distract vertebrae, between which the portion of the body or the supporting means has been placed, by rotation of the body or the supporting means about the major axis.

2. The intervertebral fusion device of Claims 1, wherein at least a part of the distal portion of the body has a height distinct from a width taken along the cross-section of the body, whereby the body can distract vertebrae between which at least the part of the distal portion has been placed by rotation of the body about the major axis.

3. The intervertebral fusion device of Claim 2, wherein the supporting means is at least one member selected from the group consisting of a cage, a balloon and a ramp.

4. The intervertebral fusion device of Claim 3, wherein the supporting means is a cage.

5. The intervertebral fusion device of Claim 4, wherein the cage substantially maintains natural angle between the distracted vertebrae.

6. The intervertebral fusion device of Claim 5, wherein the cage substantially maintains natural angle between the distracted vertebrae upon detachment of the body from the cage.

7. The intervertebral fusion device of Claim 4, wherein the supporting means further includes at least one balloon, wherein an interior of the balloon is in fluid communication with the conduit defined by the cage.

8. The intervertebral fusion device of Claim 7, wherein the supporting means further includes at least one material selected from the group consisting of morsellized autograft, demineralized bone matrix, bone marrow aspirate, bone marrow concentrate, platelet-rich plasma, hyaluronic acid, collagen, calcium phosphate cements, and bioabsorbable polymers.

9. The intervertebral fusion device of Claim 8, wherein the bioabsorbable polymer includes at least one member of the group consisting of poly(lactic acid), poly(glycolic acid), polydioxanone, polyhydroxybutyrate, polyhydroxyvalerate, poly(propylene fumarate), polyoxaesters, amino acid-derived polycarbonates, biodegradable polyurethanes and their copolymers and wherein the non-bioabsorbable polymer includes at least one member of the group consisting of ether-ketone polymers (polyetheretherketone), poly(ethylene terephthalate), poysulfone, polypropylene and nylon.

10. The intervertebral fusion device of Claim 8, wherein at least one of the morsellized autograft, demineralized bone matrix, bone marrow aspirate, bone marrow concentrate, platelet-rich plasma, hyaluronic acid, collagen, calcium phosphate cements, and bioabsorbable polymers is within the balloon.

11. The intervertebral fusion device of Claim 3, wherein the supporting means includes a balloon.

12. The intervertebral fusion device of Claim 11, wherein the supporting means further includes at least one material selected from the group consisting of morsellized autograft, demineralized bone matrix, bone marrow aspirate, bone marrow concentrate, platelet-rich plasma, hyaluronic acid, collagen, calcium phosphate cements, and bioabsorbable polymers.

13. The intervertebral fusion device of Claim 12, wherein at least one of the morsellized autograft, demineralized bone matrix, bone marrow aspirate, bone marrow concentrate, platelet-rich plasma, hyaluronic acid, collagen, calcium phosphate cements, and bioabsorbable polymers are within the balloon.

14. The intervertebral fusion device of Claim 13, wherein the balloon is asymmetric, whereby a natural angle between the distracted vertebrae is substantially maintained.

15. The intervertebral fusion device of Claim 1, wherein the supporting means has a height distinct from a width taken along the cross section of the supporting means, whereby the supporting means can distract vertebrae between which the supporting means has been placed, by rotation of the body and the supporting means about the major axis.

16. The intervertebral fusion device of Claim 15, wherein the supporting means is at least one member selected from the group consisting of a cage and a ramp.

17. The intervertebral fusion device of Claim 16, wherein the supporting means is a cage.

18. The intervertebral fusion device of Claim 17, wherein the cage substantially maintains natural angle between the distracted vertebrae.

19. The intervertebral fusion device of Claim 18, wherein the cage substantially maintains natural angle between the distracted vertebrae upon detachment of the body from the cage.

20. The intervertebral fusion device of Claim 19, wherein the supporting means further include at least one balloon, wherein an interior of the balloon is in fluid communication with the conduit defined by the cage.

21. The intervertebral fusion device of Claim 20, wherein the supporting means further includes at least one material selected from the group consisting of morsellized autograft, demineralized bone matrix, bone marrow aspirate, bone marrow concentrate, platelet-rich plasma, hyaluronic acid, collagen, calcium phosphate cements, and bioabsorbable polymers.

22. The intervertebral fusion device of Claim 21, wherein the bioabsorbable polymer includes at least one member of the group consisting of poly(lactic acid), poly(glycolic acid), polydioxanone, polyhydroxybutyrate, polyhydroxyvalerate, poly(propylene fumarate), polyoxaesters, amino acid-derived polycarbonates, biodegradable polyurethanes and their copolymers and wherein the non-bioabsorbable polymer includes at least one member of the

group consisting of ether-ketone polymers (polyetheretherketone), poly(ethylene terephthalate), poysulfone, polypropylene and nylon.

23. The intervertebral fusion device of Claim 21, wherein at least one of the morsellized autograft, demineralized bone matrix, bone marrow aspirate, bone marrow concentrate, platelet-rich plasma, hyaluronic acid, collagen, calcium phosphate cements, and bioabsorbable polymers are within the conduit defined by the cage and within the balloon.

24. A kit for providing a fusion-promoting material comprising:

(a) an intervertebral fusion device, said device including

(i) a body having a proximal portion along a major axis of the body and a distal portion along the major axis and wherein the body defines a conduit substantially parallel to the major axis; and

(ii) supporting means at the distal portion that support vertebrae in a distracted position while the vertebrae fuse and wherein the supporting means define a conduit in fluid communication with the conduit defined by the body,

wherein at least a portion of the body or the supporting means has a height distinct from a width taken along a cross-section of the portion of the body or supporting means perpendicular to the major axis, whereby the portion of the body or supporting means can distract vertebrae, between which the portion of the body or the supporting means has been placed, by rotation of the body or the supporting means about the major axis; and

(b) a flowable material selected from the group consisting of morsellized autograft, demineralized bone matrix, bone marrow aspirate, bone marrow concentrate, platelet-rich plasma, hyaluronic acid, collagen, calcium phosphate cements, bioabsorbable polymers and bone growth.

25. A method of fusing vertebrae, comprising the steps of:

(a) inserting between two vertebrae an intervertebral fusion device, said device including

(i) a body having a proximal portion along a major axis of the body and a distal portion along the major axis and wherein the body defines a conduit substantially parallel to the major axis; and

(ii) supporting means at the distal portion that support vertebrae in a distracted position while the vertebrae fuse and wherein the supporting means define a conduit in fluid communication with the conduit defined by the body,

wherein at least a portion of the body or the supporting means has a height distinct from a width taken along a cross-section of the portion of the body or supporting means perpendicular to the major axis, whereby the portion of the body or supporting means can distract vertebrae, between which the portion of the body or the supporting means has been placed, by rotation of the body or the supporting means about the major axis; and

(b) rotating the body or the supporting means, whereby the vertebrae are supported in a distracted position while the vertebrae fuse, thereby fusing the vertebrae.

26. The method of Claim 25, further including the step of removing at least a portion of an intervertebral disk between said verterbrae to thereby form an intervertebral space prior to inserting the intervertebral fusion device.

27. The method of Claim 25, wherein at least a portion the body is inserted between the vertebrae, said portion of the body has a height distinct from a width taken along a cross-section perpendicular to a major axis of the body, and wherein rotation of the body distracts the vertebrae.

28. The method of Claim 27, wherein rotation of the body at least partially restores a natural angle between the vertebrae.

29. The method of Claim 28, wherein the supporting means is selected from the group consisting of a cage, a balloon and a ramp, and further including the step of directing at least one member selected from the group consisting of cortical bone graft, a bioabsorbable polymer and a nonbioabsorbable polymer, into the conduit defined by the supporting means, whereby the supporting means substantially maintains a natural angle between the vertebrae following removal of the body from between the vertebrae.

30. The method of Claim 29, wherein at least one of said cage, balloon, ramp or an intervertabral space are filled by directing at least one of the cortical bone graft, bioabsorbable polymer and non-bioabsorbable polymer through the conduit defined by the body.

31. The method of Claim 30, further including the step of at least partially filling said intervertebral space with at least one member of the group consisting of morsellized autograft, demineralized bone matrix, bone marrow aspirate, bone marrow concentrate, platelet-rich plasma, hyaluronic acid, collagen, calcium phosphate cements, and bioabsorbable polymers.

32. The method of Claim 25, wherein the supporting means is inserted between the vertebrae, the supporting means has a height distinct from a width taken along a cross-section of the supporting axis perpendicular to the major axis of the body, and wherein rotation of the supporting means distracts the vertebrae.

33. The method of Claim 32, wherein rotation of the supporting means at least partially restores a natural angle between the vertebrae.

34. The method of Claim 33, wherein the supporting means is selected from the group consisting of a cage, a balloon and a ramp, and further including the step of directing at least one member selected from the group consisting of morsellized autograft, demineralized bone matrix, bone marrow aspirate, bone marrow concentrate, platelet-rich plasma, hyaluronic acid, collagen, calcium phosphate cements, and bioabsorbable, into the conduit defined by the supporting means, whereby the supporting means substantially maintains a natural angle between the vertebrae while the vertebrae fuse.

35. The method of Claim 34, wherein the cage, balloon, ramp or an intervertebral space are filled by directing at least one of the morsellized autograft, demineralized bone matrix, bone marrow aspirate, bone marrow concentrate, platelet-rich plasma, hyaluronic acid, collagen, calcium phosphate cements, and bioabsorbable polymers through the conduit defined by the body.

36. The method of Claim 35, further including the step of at least partially filling the intervertebral space with at least one member of the group consisting of morsellized autograft, demineralized bone matrix, bone marrow aspirate, bone marrow concentrate, platelet-rich plasma, hyaluronic acid, collagen, calcium phosphate cements, and bioabsorbable polymers.